

Shuttle-Mir



EVA update: Mir 23 Commander Vasily Tsibliev and Flight Engineer Alexander Lazutkin will return to Earth Aug. 14. Their successors on Mir, Mir 24 Commander Anatoly Solvyev and Flight Engineer Pavel Vinogradov, will perform the internal Extravehicular Activity (EVA) to repair the damaged Russian Space Station Mir. The Mir 24 crew is set to launch Aug. 5 from Baikonur and dock with Mir Aug. 7. U.S. astronaut Mike Foale will await the arrival of the STS-86 crew in September to return to Earth.

STS-86



Atlantis (20th flight)
Pad 39A (87th Shuttle flight)
Launch date: Sept. 18, about 1:42 a.m. EDT, 7-10 minute window
7th Shuttle-Mir docking
Crew: Wetherbee; Bloomfield; Parazynski; Titov; Chretien; Lawrence

Lunar Prospector



LMLV stacking: First stage of the Lockheed Martin Launch Vehicle (LMLV) that will propel NASA's Lunar Prospector into space is hoisted July 13 at Launch Complex 46 on Cape Canaveral Air Station. Liftoff is targeted for Sept. 24.

Spaceport News

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John F. Kennedy Space Center

LONGTIME COLLEAGUES — KSC Launch Site Support Manager Virginia Whitehead and ASTRO-SPAS Mission Manager Dr. Konrad Moritz have been working together to support German SPAS missions since STS-7 in 1983. They are shown here in the SPAS Payload Operations Center at KSC, from where the CRISTA-SPAS will be controlled on-orbit during STS-85.



KSC-based team ready again to support STS-85 payload on-orbit

When the Space Shuttle Discovery lifts off on STS-85 at 10:41 a.m., Aug. 7, it will carry onboard the handiwork of a veteran team that dates back to STS-7 in 1983.

Five Shuttle flights to date — STS-7, STS 41-B, STS-51, STS-66 and STS-80 — have carried the German-built Shuttle Pallet Satellite (SPAS), designed to serve as a platform for scientific instruments. For three of those missions and now for STS-85, the on-orbit SPAS payload will be controlled from here at KSC — the only payload ever to be controlled from Kennedy.

Among those that have made the SPAS missions an unparalleled success are Virginia Whitehead, the KSC Launch Site Support Manager (LSSM), and Dr. Konrad Moritz, the ASTRO-SPAS mission manager from German contractor Daimler-Benz Aerospace.

The two have collaborated on all six SPAS flights to date. "I remember how impressed I was when I first talked to Konrad for STS-7 SPAS requirements," recalled Whitehead. "He gave me their

requirements over the phone long distance. You don't expect a mission manager to have that level of technical detail."

An LSSM, said Whitehead, is like a den mother for payload personnel. "You keep them out of trouble and get them what they need," she said.

For an international team like the SPAS folks, that means she has to handle everything from the very technical to the very cultural to the very mundane. When her customer needed to conduct some specialized testing of the flight hardware, Whitehead found a place to do it. She's become expert at customs requirements and can tell you what needs to be done to clear souvenir T-shirts through the paperwork maze. Most challenging of all, she helped set up the SPOC — the SPAS Payload Operations Center at KSC — for operating the SPAS on-orbit.

The most recent SPAS missions, including STS-85, are part of a research series called ASTRO-SPAS. CRISTA-SPAS is now flying for the

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Mars Pathfinder Web traffic gets help from KSC

As the world continues to tune into the Mars Pathfinder mission, computers at KSC are helping to respond to the huge amount of Internet traffic that the mission has generated. NASA's Jet Propulsion Laboratory (JPL), which manages Mars Pathfinder, originally anticipated that about 20 mirror Web sites around the world could handle the loads.



That number has increased to 37 mirror sites in 17 countries, some in foreign languages. Preliminary estimates coming out of JPL indicate the mission is generating an average of 47 million hits per day, said KSC Webmaster Jim Dumoulin. By contrast, last summer's Olympic games in Atlanta drew 21 million hits per day.

On July 4, the day Pathfinder touched down on Mars, the combined JPL and mirror sites sustained about 30 million hits, making Mars Pathfinder the most popular NASA mission ever as far as Internet users are concerned.

For Dumoulin and Assistant Webmaster Mike Downs, the period around landing was especially challenging because STS-94 was still under way, drawing in additional traffic from Shuttle watchers.

The KSC complement of four DEC Alpha servers located in the Operations and Checkout Building, with 2

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Web. . .

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gigabytes of memory and 160 gigabytes (Gbytes) of disk, could easily handle the load. The real challenge was managing traffic on the communications lines coming into and exiting the center, which have less capability than the servers.

"My job that day was to play computer traffic cop and make sure the data transfer channels didn't get overloaded," Dumoulin observed.

Interestingly enough, while the total number of hits taken by the KSC servers on July 4 represents a new record for the center, Shuttle launches attract a higher rate per second right around launch time, Dumoulin said.

"Our servers get tested six to eight times a year with Shuttle launches," he noted. "On July 4th for the Mars landing we took 2.6 million hits for the entire day and sent out 19.5 Gbytes of data. By comparison, for the STS-94 launch on July 1st, we received 1.8 million hits for the day and sent out 19.7 Gbytes of data. However, most of our Shuttle traffic occurred in the hours directly before and directly after the launch while the Mars traffic was fairly spread out throughout the day."

Be Property Aware

Property Awareness Week is Aug. 11-15. The intent is to make all KSC personnel more receptive to property management issues and concerns, and to offer visibility to property custodian functions and user responsibilities.

Since KSC controls and maintains about 120,500 line items of personal property valued in excess of \$6.4 billion, property losses should be an important concern to employees at the space center.



Home again

FLAWLESS FLIGHT — The orbiter Columbia touches down on Runway 33 of the Shuttle Landing Facility at 6:46 a.m. EDT, July 17. OV-102's performance during the nearly 16-day flight was flawless and the seven-member crew was thrilled with the amount of planned and extra data they were able to gather on the Microgravity Science Laboratory-1 mission. More than 200 fires were set as part of combustion research. One study resulted in the weakest flames ever burned, while another the longest-burning flames ever ignited in space.

Visitor Center gets a new name and a new logo

The KSC Visitor Center has just turned 30 years old, and in so doing has grown from a center to a complex.

The attraction recently unveiled a new logo and announced the name change at the same time.

"The new name and logo are in keeping with the expanding scope of the visitor experience," said Jim Ball, NASA Public Affairs Visitor Complex Branch chief.

The KSC Visitor Complex, as it will now be known, is in the midst of its largest expansion ever. The growth began last December with the opening of the award-winning Apollo/Saturn V Center. Two new KSC tour stops — the International Space Station Center and Launch Complex



39 Observation Gantry — will open later this year. Improvements and upgrades also are planned for the complex itself, located on KSC's west side.

"The Apollo/Saturn V Center has provided us with a terrific start, but we're not resting," said Ball. "The new tour destinations and complex improvements will further advance our efforts to communicate the NASA story to our visiting guests and expand their understanding of what the space effort means to them."

Among the planned changes is a complete remodeling of the

original visitor center building located at the front of the complex. A new entry will feature an orientation video and improved visitor information as well as a tribute to the Center's namesake, President John F. Kennedy.

Located in the wings of the building will be a new 300-seat theater, a "Tour of the Solar System" attraction, and an expanded Merritt Island Wildlife Refuge and Canaveral Seashore exhibit.

Work on these improvements is expected to begin late this year.

The KSC Visitor Complex is one of Florida's five most visited attractions. It is operated for NASA by Delaware North Parks Services of Spaceport.

Challenger license plate week to be held Aug. 2-8

The opportunity to meet NASA astronauts will highlight the lineup Aug. 2-8, as the Astronauts Memorial Foundation (AMF) and the KSC Visitor Complex thank Floridians for their support of the Challenger license plate program.

The weeklong celebration also marks the 30th anniversary of the visitor facility.

More than 600,000 Floridians have purchased the Challenger plate. Currently,

the AMF receives a portion of Challenger plate sales to provide training to Florida educators in the Center for Space Education. "Since the program began in 1994, the AMF Educational Technology Institute has graduated over 2,300 Florida educators, from 47 Florida school districts, with training valued at \$3 million," said AMF President James De Santis.

Astronauts scheduled to appear at the Center for Space

Education (adjacent to the Visitor Complex on the west side) Aug. 4-8, 10 a.m. – 2 p.m., are: Aug. 4, Jim Adamson, currently United Space Alliance chief operating officer; Aug. 5, Loren Shriver, now KSC deputy director for Launch and Payload Processing; Aug. 6, Fred Gregory, now NASA Associate Administrator for Safety and Mission Assurance; Aug. 7-8, former Apollo 13 Lunar Module Pilot Fred Haise.



X-34 ARTIST'S CONCEPT — Orbital Sciences Corp., Dulles, Va., is the prime contractor for the X-34. The X- designation originally was XS for eXperimental Supersonic, and applied to a family of experimental aircraft not intended for production beyond a limited number built for flight research. More information on the X-planes is available on the Dryden Web pages.

X-38 flight tests planned at Dryden

A spacecraft that could become a lifeboat in space is set to begin unpowered flight tests in mid-September.

Called the X-38, the spacecraft represents an innovative new design as a technology testbed. Its primary application would be as a lifeboat for the International Space Station. It would be delivered to the station by the Space Shuttle. The project also aims to develop a design that could be modified easily for other uses, such as a possible joint U.S. and European spacecraft that could be launched on the Ariane 5 booster.

In the early years of the station, a Russian Soyuz spacecraft will serve as the crew return vehicle. But as the size of the station crew increases, a return vehicle like the X-38 is needed to accommodate as many as six passengers.

X-38 design takes advantage of available equipment and existing technology for as much as 80 percent of the spacecraft's design. It features a lifting body concept originally developed by the Air Force's X-24A project in the mid-1970s.

Following jettison of a deorbit engine module, the X-38 would glide from orbit unpowered, like the Shuttle orbiter, and then use a steerable parafoil parachute for its final descent to landing.

"Beginning full-scale tests is a big milestone for us that our team has been looking forward to with a lot of excitement," said X-38 Project Manager John Muratore. "No one has ever done anything like this before — deploying a parafoil from a lifting body and flying a lifting body with an all-electric flight control system — and there are unknowns. We expect surprises. But we have done a lot of work to minimize the unknowns, and we are confident this vehicle can perform well."

The atmospheric test vehicle, designated vehicle 131, is the first of three full-scale vehicles largely built at Johnson Space Center. Flight testing began at Dryden in late July with captive carry flights during which the vehicle remains attached to the NASA B-52 aircraft.

In the first freeflight drop test — set for mid-September — vehicle 131 will be released at an altitude of 25,000 feet.

Similar testing will continue periodically at Dryden through late 1999. An unpowered space flight test is scheduled for launch aboard the Space Shuttle in 2000.

X-34 systems design freeze completed

A late May meeting at X-34 prime contractor Orbital Sciences Corp.'s Dulles, Va., headquarters resulted in the systems design freeze for the X-34 technology demonstrator.

The review essentially anchors the design of X-34 systems, including structures, guidance, navigation and control, thermal protection systems and main propulsion. This allows the program to proceed with fabrication of these systems.

Initial flights are set to begin in late 1998 at White Sands Missile Range, N.M. Up to 25 flights within a year's time are scheduled, and some will take place in Florida to demonstrate subsonic landing and thermal

protection system performance through inclement weather conditions.

The X-34 is regarded as a bridge between the earlier subsonic Clipper Graham and the larger and higher performance X-33 Mach 15 demonstrator slated to begin flights in early 1999.

Six NASA centers, Department of Defense installations (White Sands Missile Range and Holloman Air Force Base) and an industry team led by prime contractor Orbital Sciences Corp. are developing and will flight test the X-34, a reusable, suborbital, air-launched vehicle that will fly at speeds up to eight times the speed of sound and altitudes up to 50 miles.

X-33 Environmental Impact Statement released

NASA has issued its Draft Environmental Impact Statement (EIS) on the development and flight testing of the X-33 Advanced Technology Demonstrator. Public comment on the statement will be accepted through Aug. 17.

The study examines the potential impact of the X-33 program and touches on such issues as noise and sonic booms, flight safety and impact on airspace and air traffic patterns.

As many as 15 flight tests of the X-33 are planned to originate from Edwards Air Force Base, Calif., and land at sites in southern California, Utah and Montana or Washington, beginning in 1999.

Public meetings also are under way to present the study's findings and to seek public comment. The final EIS is slated for completion in September.



X-38 test vehicle arrives at Dryden June 4, transported on an Air Force C-17 transport from Johnson Space Center. The compact vehicle is about 29 feet long, about 15 feet wide and weighs about 16,000 pounds.

Halon expertise leads KSC worker to the international lecture circuit

Ever had one of those days where it seems like you're constantly putting out fires? Michelle Collins has had more than 10 years of them.

That's part of the reason this engineer in NASA's Environmental Protection Office at Kennedy Space Center is so highly in demand.

In the past year, Collins has delivered many presentations in the United States

and around the world on halon reduction strategies as well as NASA's fire protection policies and systems — mostly by special invitation.

She has worked for NASA and the U.S. space program for more than a decade in the fields of mechanical design, fire protection, and environmental engineering, but it is her knowledge and ability to handle burning issues that has spread like wildfire. Collins has now been to China, Russia, Australia, India, England, France, Belgium, Switzerland, Canada, and Poland, as well as many locations in the United States, to speak about

halon reduction and recycling issues and KSC successes in that area. (Halon, a commonly used fire-fighting agent, is now universally recognized as the most severe ozone-depleting substance.)

"The interest in KSC's halon recycling and bank management system has been astronomical in spite of the fact that most of our facilities and operations

are unique," Collins noted. "Payload and orbiter processing facilities, for example, aren't something we share in common with a lot of other governments and groups, but many organizations are especially interested in how we've been able to be so effective in finding alternatives to halon with limited budgets in a very short time. Certain countries, for example, are particularly intrigued by how a large government agency such as NASA has been able to take such a forward-thinking approach and implement our designs so efficiently. It speaks highly for NASA."



COLLINS spoke at a conference in India earlier this year. Her career in the space program began in Utah with Morton Thiokol before she came to KSC in 1988.

It also speaks highly for Collins, who prepared the initial study for NASA back in 1988 proposing to phase out KSC's halon systems.

It was in 1989, the same year Collins released her proposal, that 29 countries along with the European Economic Community ratified the Montreal Protocol, an agreement designed to control and eventually eliminate the production of halon and other ozone-depleting substances. (The protocol now has more than 160 signatory countries.)

Collins now sits on the United Nations Environmental Programme's Halon Technical Options Committee (HTOC), representing NASA and the U.S. government.

Collins credits KSC management, in particular Installation Operations Director Marv Jones, for supporting her.

"If more employees would turn to their managers for support of good ideas, they'd be surprised at just how far they can go and what they can do," she commented.

EG&G plans work force cuts

KSC Base Operations Contractor (BOC) EG&G Florida announced in late July that it has initiated actions to reduce the size of the BOC work force by about 190 people in the next six weeks. The effective date will be Sept. 5.

This action is being taken as a cost-cutting move necessitated by NASA's reduced operating budget over the past several years. "In 1996 and 1997, we were able to avoid layoffs through a combination of attrition and cutbacks in other areas such as facility projects and the purchase of supplies and materials," said Dick Jolley, president and general manager of EG&G Florida. "The reduction needed for Fiscal Year '98 was too big to be accommodated by the

methods used previously."

The exact positions to be eliminated have not yet been determined. However, the reduction in force will be spread across the entire contract to include some subcontract personnel. Through voluntary resignations, job-sharing and retirements, the company hopes to keep the number of those affected as low as possible.

"We have a strong team working together to accomplish our contract requirements," Jolley said. "We will strive to do everything possible to aid each individual affected by this reduction." Affected employees will be provided a wide range of outplacement services, including job search assistance.

Saying thanks



STS-84 Commander Charlie Precourt is surrounded by an admiring throng during an autograph-signing session in the Training Auditorium. The STS-84 astronauts returned to KSC July 20 to thank workers for their support.

KSC FEW chapter racks up honors

The Space Coast Chapter of the Federally Employed Women (FEW) organization recently earned a number of honors at its annual National Training Program in Dallas both for FEW and the space center.

KSC received FEW's top honor, the Federal Department/Agency Award.

The honor is given to the federal department or agency which has shown exemplary service to Federally Employed Women by providing services or activities directly

benefiting FEW, or for having made significant contributions of resources and services critical to the success of FEW's program activities.

KSC Associate Director for Advanced Development and Shuttle Upgrades JoAnn Morgan accepted on behalf of the center.

Other honors included:

- The Space Coast Chapter placed first for the Helen R.

Dudley Chapter Overall Achievement Award. This award is given to a chapter in recognition of consistent, excellent performance during the program year;

- First place went to the chapter for best fund-raiser, which is FEW's annual local training program;

- First place also went to the Space Coast group for its monthly programs.

New officers were recently installed at the chapter's annual banquet: President – Sandy McCandless,



NASA; President-Elect – Vickie Hall, NASA; Vice President – Carole McCline, NASA; Secretary – Suzanne Worland, BNA; Treasurer – Judy Vermilye, NASA.

Shannon Bartell, Payload Flight Operations director, received the award for distinguished service. FEW Chapter Member of the Year went to past chapter president Becky Fasulo.

Brisbin takes on post of NASA environmental health officer

NASA veteran Steve Brisbin has been named senior environmental health officer for NASA in the newly formed Lead Center Office for Occupational Health Programs at KSC. KSC was named



Brisbin

the lead center this year.

Brisbin previously worked at NASA's Ames Research Center, and also has worked in private industry. He has about 20 years of experience in industrial hygiene, safety and environmental health.

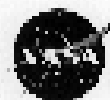
"Initial emphasis will be placed on the establishment of a technical support function

for the centers, on increasing the communications and program-sharing among NASA occupational health professions, and on program standardization and automation," Brisbin said.

The five goals of NASA's Occupational Health program are: Recognition, evaluation and control of health hazards associated with chemical, physical and biological agents; prevention of occupational injury and illness; provision of quality health care and counseling; avoidance of, or delay in the onset of, premature employee death and disability; and the assessment and documentation of agency compliance with all applicable legal and regulatory requirements.

Call for SEARCH crew mentors

ASTROPHYSICAL OBSERVATION
Crew Mentor Program
John F. Kennedy Space Center
Cape Canaveral, FL 32917



TO: Public Information

FROM: NASA's Lead Center

SUBJECT: Call for KSC SEARCH Crew Mentors

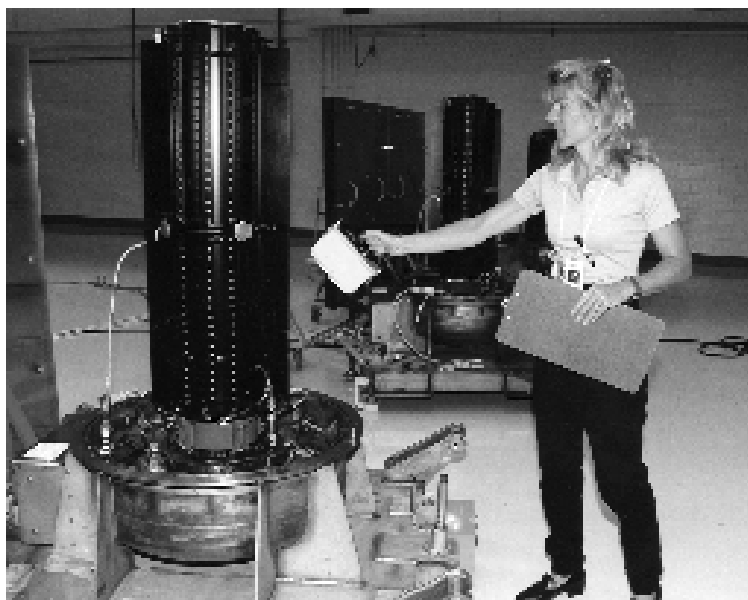
The KSC Astronomy, Engineering, and Science Education (SEARCH) Crew Program is looking for mentors for the 1997-98 season. The SEARCH Crew Program is a mentorship program established to encourage planetary science and space-related careers in children. The program consists of a series of workshops, field trips, and other activities that will inspire them to pursue careers in science, engineering, and technology. To fully support this important educational outreach program and appreciate all those who choose to volunteer as helping the Search in this endeavor.

Your administrative office has been provided information regarding which should answer any of your questions. If you would like to be a mentor, please contact our Equal Opportunity/Outreach Office at 384-0101 by Friday, August 8, 1997.

[Signature]
For: [Name]

Attachment:
Form 361-200 Search Crew Mentor Application

Radiation survey



EG&G Environmental Health Specialist Jamie Keeley uses a radiation dose-rate meter in mid-June to measure the external radiation levels around one of three Radioisotope Thermoelectric Generators (RTGs) which will provide electrical power to the Cassini spacecraft after launch. Keeley is one of several EG&G Health Physics personnel who routinely perform radiation protection surveys and monitoring around KSC as part of the center's Radiation Protection Program. While RTGs are rather special units, they share similar characteristics with other radiation sources which are routinely used in the space program, such as radiography sources used in nondestructive testing of flight hardware, and flight and ground sources used for calibration of spacecraft instruments and detectors.



CRISTA-SPAS-2 undergoes final preparations in the Multi-Payload Processing Facility prior to installation in the payload canister transporter and transfer to Launch Pad 39A.

SPAS. . .

(Continued from Page 1)

second time as part of this series. A second payload, the Orbiting and Retrievable Far and Extreme Ultraviolet Spectrometer-SPAS (ORFEUS-SPAS), completed its second flight on STS-80 last year.

The ASTRO-SPAS program is based on a Memorandum of Understanding between NASA and the German Space Agency (DARA).

While ORFEUS-SPAS is an astronomy mission focusing on stars and the interstellar medium, CRISTA-SPAS looks Earthward, gathering data about the middle atmosphere.

The first CRISTA-SPAS flight returned a wealth of data. CRISTA uses three telescopes and four spectrometers to measure variations in the concentrations of atmospheric trace gases.

By measuring the presence of these gases both vertically and horizontally at very high resolution on a global scale, researchers can form a better understanding of such phenomenon as the ozone hole that forms annually in the Antarctic.

CRISTA-SPAS is released from the orbiter, flying free for nine days of data-gathering. The German team based in the SPOC at KSC will control and

point the CRISTA-SPAS scientific instruments, with the orbiter serving as the link between the two.

What makes the SPOC so challenging for people like the LSSM is that it extends and expands their responsibility. "Your job doesn't end at launch," Whitehead observed.

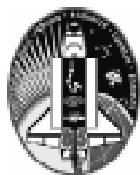
Whitehead will continue working with the German team through the departure of the telescope personnel in November.

This is the last SPAS mission to date; a program extension with more flights is being negotiated between NASA and the German Space Agency. For Whitehead, whose LSSM career has been largely devoted to supporting SPAS, it will not be a happy respite.

"I love working with them," she said of her German colleagues. "They're sharp, they're thorough and their English is excellent. They've made my job very easy."

"Virginia is really our SPAS team's mother here at KSC," commented Moritz. "We love her and we will miss her."

Other payloads flying on STS-85 include a prototype robotic arm designed for the Japanese Experiment Module (JEM) on the International Space Station and a variety of astronomical, new technology and biological experiments.



Atlantis Modal Testing is team work

When Atlantis returned from the sixth Shuttle-Mir docking mission, it was in great shape and required little re-configuration for its next flight. Taking advantage of the extra time, Shuttle managers decided to perform the orbiter's routine Modal Test one flight early.

A Modal Test typically is performed after an orbiter's last flight prior to an Orbiter Maintenance Down Period (OMDP). It validates the structural integrity of the vehicle.

The test requires technicians to attach hundreds of interconnected sensors and instrumentation to the orbiter's outer surface.

With the orbiter trussed up like a Christmas tree, various high frequencies are imposed on the vehicle allowing data to be collected by the network of wires and instrumentation. Low-

level loads are generated by six shakers mounted to the vehicle in six locations placing stress loads on the orbiter structure. The sensors measure these loads and help engineers evaluate the vehicle's structural integrity. Preliminary results show that Atlantis remains in excellent structural condition.



Above — Roy Heintz works on the vertical stabilizer. Below, Roger Davis stands under a wing strewn with wiring and sensors as Rick Weisemiller looks down from above. Atlantis is located in Orbiter Processing Facility Bay 3.



John F. Kennedy Space Center

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